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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,895	08/11/2004	Boris A. Movchan	13DV-13975-4	4894

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EXAMINER	
VETERE, ROBERT A	

ART UNIT	PAPER NUMBER
1712	

NOTIFICATION DATE	DELIVERY MODE
05/14/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/710,895	MOVCHAN ET AL.	
	Examiner	Art Unit	
	ROBERT VETERE	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 January 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-14,18 and 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-14, 18, 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/29/10 has been entered.

Response to Amendment

2. The affadavit under 37 CFR 1.132 filed 1/29/10 is sufficient to overcome the rejection of claims 11 and 17-20 based upon Rigney et al. (US 6,492,038).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 11, 14, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al. (US 6,835,465) in light of Ioki et al. (US 5,390,217).

Claim 11: Allen teaches a process of producing a thermal barrier layer comprising: forming the thermal barrier coating at an elevated temperature (e.g. via flame spraying, EB-PVD, etc) by co-evaporating carbon and a thermal-insulating material to deposit elemental carbon in pores (i.e. that are within grains and at and between grain boundaries of the thermal insulating material, the pores establishing an open porosity within the thermal barrier coating (9:1-21, 44-57; 10:56-60); and volatilizing the graphite (i.e. producing a carbon-containing gas from the elemental carbon) by heat treating (claimed sintering) the graphite to thereby modifiy the pores (8:53-9:6, 44-57). While Allen fails to expressly state that the gas is trapped within the pores, it is inherent that this occurs in the method of Allen because Allen teaches the same process steps using the same materials (see, e.g., 4:22-40) as those described in

applicant's specification. Since Allen teaches substantially the same processing steps as Applicants, the pores containing the carbon-containing gas are inherently resistant to sintering, grain coarsening, and pore redistribution.

Allen, however, teaches that the graphite is volatilized at 450ºC (8:53-9:6). Ioki teaches that graphite can be partially sublimated (i.e. volatilized) at temperatures around 2800ºC (2:6-18). In the case where the claimed ranges overlap or lie inside ranges disclosed by the prior art a prima facie case of obviousness exists. Also, a range can be disclosed in multiple prior art references instead of in a single prior art reference depending on the specific facts of the case. MPEP § 2144.05(I). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected a temperature of between 950ºC and 2800ºC as the temperature used to volatilize the graphite with the predictable expectation of success in the method of Allen.

Claim 14: Allen teaches an open porosity in the thermal barrier coating that constitutes at least 25 volume percent of the thermal barrier coating (col. 9, lines 44-46).

Claim 18: Allen also teaches that the sinter step forms additional pores (9:1-6).

Claim 20: Allen also teaches that the thermal insulating material is zirconia stabilized with yttria (3:16-39) and that the coating comprises columnar grains (4:46-49).

5. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen and Ioki as applied to claim 11 above, in view of Alperine et al. (US 6,312,832 B1).

Allen teaches depositing a thermal barrier coating by electron beam vapor deposition during which a thermal-insulating material and a carbon-containing (graphite material as per claim 13) material are simultaneously evaporated (9:1-21; 10:56-60). Although Allen does not expressly state the precursor materials were in the form of ingots, it was well known in the art at the time of the invention to utilize source materials in the form of ingots for evaporation in EB-PVD processes (see Alperine as evidence at 4:42-51).

Response to Arguments

5. Applicant's arguments with respect to claim 11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT VETERE whose telephone number is (571)270-1864. The examiner can normally be reached on Mon-Fri 9-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert Vetere/
Examiner, Art Unit 1712

/Michael Cleveland/
Supervisory Patent Examiner, Art Unit 1712